BOTANICAL GAZETTE.

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Notes on Carex.—III.

(WITH PLATE.)

BY L. H. BAILEY, JR.

1. CAREX NERVINA, n. sp., connecting the groups *Fœtidæ* and *Vulpinæ*: Culm flat and weak, smooth, striate, about 18 inches high from a woody root; leaves ample, broad, striate above, minutely nodulose below, the upper equalling the culm, the lower short ($\frac{1}{2}$ to 3 inches long) from loose truncate sheaths; spikes densely aggregated into a fulvous head ($\frac{1}{2}$ to $\frac{3}{4}$ inch long) which is subtended by one or two setaceous bracts of half its length; perigynium lanceolate, spongy and compressed at the base, firm in texture, very strongly many-nerved, marginless and smooth throughout, about the length of the very thin acute scale; achenium oval (Figs. 6 and 7).—Summit Camp, California, July 10, 1870.—*Dr. A. Kellogg.* In aspect much like *C. Hoodii*, Boott, but at once distinguished by its smooth, firm and strongly nerved perigynium. The perigynium is somewhat like that of *C. stipata*. In the specimens I have examined the spikes, of which the head is composed, are compound at the base, and the basal branches are all staminate. Most of the top of the spike is staminate, and the two or three pistillate flowers appear as if borne in the center of a continuous staminate spike.

2. CAREX MURICATA, L., var. CONFIXA, n. var. Differs from the usual forms of the species in its very slender and mostly prolonged culms (which are 1 to $2\frac{1}{2}$ feet high), and its oval or oblong continuous head of spikes, and in an habitually narrower perigynium.—*C. Hoodii* of authors, not Boott. N. W. Wyoming (*C. C. Parry, 281*); Wahsatch Mts., Utah (*Watson 1228*); California, Toulumne River (*Brewer, 1702* and *1772*, and *1069 Kellogg & Harford*); Union Co., Oregon (*Cusick, 1182*); British Columbia (*Macoun*). Very like *C. Hoodii*, Boott, and heretofore confounded with that species, into which the stouter

forms may pass. It also approaches forms of *C. cephaloidea*. *C. Hoodii*, as I understand the species, is characterized by its much stouter culms, its much heavier, browner and more compact heads which are made up of many-flowered, chaffy, linear or ovate more or less pointed spikes, and more upright perigynia which are covered by the large scales. The brown-and-green and truncate characters of the spikes, and the spreading, greenish perigynia of the var. *confixa* are not found in *C. Hoodii* in the few specimens I have seen of that species. *C. Hoodii* occurs in California, Oregon and Kamtschatka.

3. CAREX DECIDUA, Boott, is one of the least known of our Carices. The species was founded upon specimens from Terra del Fuego and the Falkland Islands, and was first published in the Linnæan Transactions, XX, 119 (1846). Shortly after, *C. Andersoni* was published by the same author in Hooker's Flora Antarctica, II. 364. This species differed from *C. decidua* in its larger size and compound spikes. In Boott's Illustrations, I, 163 (1858), the two species were united. Collectors upon our own Pacific coast had then found the species, so that its habitat was extended to "California, *Trubner* [*Thurber?*]. Oregon, *Douglas, Nuttall, Hinds.*" The Carices collected by Dr. J. M. Bigelow in Lieut. Whipple's Exploration were submitted to Dr. Boott, and his determinations, with the other determinations of that collection, were published in vol. IV of the Pacific R. R. Reports. *C. decidua* is there given as occurring in "Mountains near Oakland, Los Angeles, Duffield's Ranch, Sierra Nevada, and other parts of California." One specimen of Bigelow's collection named *C. decidua* is in Herb. Gray, but it is *C. aquatilis*. Mr. N. L. Britton has loaned me all the specimens of *C. decidua* in the Torrey Herbarium. They are all of Bigelow's collection, and all on two sheets. One sheet is labelled "Oakland and Los Angeles." A part of the specimens are unripe; the remainder are *C. nudata*, W. Boott. The specimens on the other sheet, from "Sierra Nevada (Duffield's Ranch)," are entirely too young to be determined. Evidently Bigelow's specimens have been mixed. If the collection contained *C. decidua* it must be be at Kew. In Herb. Gray are three specimens from "N. W. Coast, Mr. Hinds, Herb. Bentham," and labelled *C. Goodenovii*, Gay, in Dr. Boott's handwriting (Figs. 1–5). These specimens answer almost perfectly the figures and final description of *C. decidua* given by Dr. Boott, and they are no doubt a part of the specimens referred to that species in the Illustrations. These specimens are the only ones I know from North America. I have an imma-

ture and depauperate specimen from Terra del Fuego, named by Dr. Boott, but it affords little aid in the determination of the species. Its perigynium is almost identical with that of *C. nudata*. There are no mature South American specimens of *C. decidua* in Herb. Gray, although a specimen from "Extra-tropical South America," collected by Dr. Cunningham, is probably to be referred to *C. nudata*. It appears probable that the original *C. decidua* was confounded with William Boott's *C. nudata*. The figures in the Illustrations are mostly those of the former *C. Andersoni*. Hinds' Oregon specimens agree with the figures of the original *C. decidua*. These Oregon specimens and the plants figured by Dr. Boott are distinguished from *C. vulgaris*, their nearest ally, as follows: *Spikes heavier; scales and perigynia deciduous; perigynium conspicuously stipitate and strongly nerved.*

No. 598 of Hall's Oregon Collection referred to *C. decidua* by Olney, and No. 594 referred to "*C. elata*, All. (*C. stricta*, Good.)," are probably the same, and evidently an undescribed species.

C. nudata, W. Boott, Bot. Cal II, 241, is distinguished from *C. vulgaris* by its fibrillose sheaths and deciduous perigynia, and from both that species and *C. decidua* by its long, thin, finely punctate and lightly nerved perigynium, which is empty in the upper half. Its spikes are much more slender than in *C. decidua*, and with the present material it appears distinct enough from that ambiguous species.

4. CAREX MICROGLOCHIN, Wahl., a North European and Greenland species, occurs in Colorado. It is 607 Hall and Harbour, the *C. pauciflora* of Porter and Coulter's Flora of Colorado. The specimens in the Gray Herbarium are labelled *C. oligantha*, Boott, in Francis Boott's handwriting. *C. oligantha* grows in Terra del Fuego. It differs essentially from *C. microglochin* in the fewer flowers, curved and conspicuously stipitate perigynium, and in the much deeper cavities in the rachis of the spike. These characters are strongly marked in specimens which I have from Terra del Fuego, but they do not appear in Hall and Harbour's specimens. Olney, in his notes which accompanied the fourth fasciculus of his *Exsiccatæ*, correctly referred Hall and Harbour's specimens to *C. microglochin*. The species is very much like *C. pauciflora*, and likely to be confounded with it, although the principal distinguishing character is decisive and infallible. The orifice of the mature perigynium of *C. pauciflora* is tightly closed by the *stiff and persistent style;* that of *C. microglochin* by a *stiff racheola which springs from the in-*

side of the perigynium beneath the achenium. A careful dissection of the perigynium at once reveals this distinction. *C. microglochin* is also smaller than *C. pauciflora*, the perigynium is less spindle shaped and more strongly reflexed. Hall and Harbour's specimens are larger than the European and Greenland specimens, and it was probably due to this fact that Dr. Boott referred them to the very similar *C. oligantha*. I do not know that *C. pauciflora* occurs in the United States west of the Mississippi, but Drummond collected it in the Rocky Mountains of British America.

5. CAREX GLOBOSA, C. UMBELLATA and C. ROSSII have been endlessly confounded at the West. After a careful study of many specimens from all parts of the West, the following characters appear to be general and decisive:

C. GLOBOSA, Boott, Trans. Lin. Soc. XX, 125. *Rootstock* woody, mostly *perpendicular*, or nearly so; *culm one, slender*, angled and scabrous, 6 to 12 *inches high; leaves* many, *broad* (2 lines wide), *upright, mostly flat or flattish*, usually exceeding the culms; *staminate spike* ½ to 1 *inch long, conspicuous; pistillate spikes* usually several, 2 to 8 flowered, *the upper one borne at or near the base of the staminate spike, the remainder on very slender radical or sub-radical peduncles; perigynium pear shaped* (rarely nearly elliptic), *very gradually tapering from a rounded summit into a stipitate very strongly-nerved base*, sparsely hirsute, the *short, straight beak slightly toothed.*—California; *Nuttall; Bolander*, Nos. 20, 2298 and 6196; *Brewer*, No. 303.

C. UMBELLATA, Schk. Riedgr. II, 75. *Rootstock* mostly *horizontal; culms many, mostly very short and crowded and concealed among the leaves*, sometimes 3 to 4 inches long; *leaves* many, *mostly narrow, generally short, stiff and curved*, sometimes weak and straggling and 6 inches long; *staminate spike* ½ *inch or less long, not usually distinct and conspicuous; pistillate spikes usually crowded among the bases of the leaves, sometimes one or more of them exserted and clustered with the staminate spike, perigynium globose elliptic, more or less flattened, nerveless or nearly so, tightly enclosing the achenium*, clothed with sparse, short hairs (rarely smooth), *margined by two prominent ridges which terminate in a flattened, sharply cut beak as long as the body.* —Frequent on dry, sandy soil throughout the Northern States east of the Mississippi and northwestward to the Rocky Mountains of British America; also in Indian Territory.

Var. BREVIROSTRIS, Boott, Illustr. II, 99. *Beak much shorter and minutely toothed, the perigynium rounder or somewhat 3-*

sided.—Rocky Mountains of British America; near Golden City, Col., and Mogollon Mountains, New Mexico (*Rev. E. L. Greene*); Cisco, Cal. (*Dr. A. Kellogg*); Plumas Co., Cal. (*Mrs. R. M. Austin*).

C. NOV.Æ-ANGLIÆ, Schw. An. Tab. More or less cespitose; *culms few, very slender, often reclining; leaves narrow, weak*, commonly as long or longer than the culms; staminate spike ½ inch or less long, often inconspicuous; *pistillate spikes small* (3 to 8-flowered), *more or less globular, some of the lower on radical peduncles, the upper one, or two, close to the staminate spike and subtended by a narrow green bract as long or longer than itself; perigynium purple or very dark green, triangular or round obovoid, densely clothed with short hairs, the beak half or less the length of the body*, stout and slightly toothed.—Dry hills from Northern New England to Greenland and Alaska; also, in Washington Territory (1145 *Brandegee*, 1883), and in Eastern Oregon (*W. C. Cusick*), and probably *Hall's* No. 603 from Oregon.

C. deflexa, Hornem., is the Greenland form of the species, differing from the Southern form in its much smaller size, greater relative length of culm, and in the pistillate spikes being more aggregated. I have this form from Alaska and Washington Territory (1145 *Brandegee*), and Oregon (*Cusick*). *C. brevipes*, W. Boott, *C. globosa*, var. *brevipes*, W. Boott, appears to be a large and triangular-fruited form of this type of *C. Novæ-Angliæ*. Drejer unites *C. Novæ Angliæ* with *C. pilulifera*, L., as var. *deflexa*. It appears to me at present that the stiff and long culms, the globular and mostly many-flowered spikes and the much rounder perigynium of *C. pilulifera* separately it specifically from *C. Novæ Angliæ*.

Var. ROSSII. *Culms and leaves firm and upright; the leaves often very strict and nearly always longer than the culms; pistillate spikes 1 to 4-flowered, linear, upright, light colored; perigynia loosely alternate on a zigzag rachis*, the flattened beak longer or shorter than the body, *less hairy than in the species.*—*C. Rossii*, Boott in Hook. Fl. Bor. Am. II. 222.—Colorado (*Vasey*, 592 A, perhaps 592; *Hall and Harbour*, 620; Twin Lakes, 1058 *Wolfe*); Oregon (*Cusick*); New Mexico (889 *Fendler*); Utah, Cottonwood Cañon (1260 *Watson*), and in the Rocky Mountains and Great Plains of British America (*Drummond, Macoun*).

C. Novæ-Angliæ, as outlined above, includes a wide variety of forms, but between which I can detect no distinguishing characters.

6. Section Phyllostachys, Carey, Gray's Manual, may be defined as follows: Spikes androgynous, staminate above. Pistillate flowers few, often remote, usually on a more or less zigzag rachis. Scales mostly prolonged and leaf like. Perigynium smooth or slightly hispid above, mostly tightly enclosing the perigynium, the beak, if any, straight.

Under this definition should be included six species, all but the type species exclusively American. These are *CC. phyllostachys*, Meyer, *multicaulis*, Bailey, *Geyeri*, Boott, *Steudelii*, Kunth, *Backii*, Boott, *Willdenovii*, Schkuhr. These species naturally arrange themselves into two subordinate groups, which may be characterized as follows:

Phyllostachyæ. Culms all as long or nearly as long as the leaves; staminate flowers conspicuous; pistillate flowers very few and large; beak very short. Including *CC. phyllostachys, multicaulis, Geyeri.*

Bractoideæ. Culms mostly much shorter than the leaves; staminate flowers inconspicuous; perigynium small, the beak produced to half or more its length; scales very green and much dilated, often concealing the perigynia and readily mistaken for bracts. Including *CC. Steudelii, Backii, Willdenovii.*

In the Monograph of N. Am. Cyperaceæ, 404, Dr. Torrey thought that *C. Willdenovii* and its allies might properly be separated under the generic name Phyllostachys. Carey made the name a sectional one.

Explanation of Plate III.—Fig. 1, *Carex decidua*, Boott, from Northwest Coast (*Hinds*), about $\frac{3}{4}$ natural size. Fig. 2, a perigynium. Fig. 3, an achenium. Fig. 4, same, side view. Fig. 5, scale. The details are enlarged about eight diameters.

Fig. 6, Head of *Carex nervina*, Bailey. Fig. 7, perigynium. Fig. 8, achenium.

The Menominee Iron Region and Its Flora.—I.

BY E. J. HILL.

Wishing to compare the flora of that part of the northern peninsula of Michigan which lies within the basin of Lake Michigan with that farther south, or near the head of the lake, the Menominee Iron Region was selected for a fortnight's work. It is in the valley of the Menominee River, a stream that for a part of its course forms the boundary between Michigan and Wisconsin. In general, it takes a southeasterly direction, and enters Green Bay on its western side about half way between its

head and the lake. This river is about 120 miles long, being the longest in the upper peninsula. The Machigamig, its principal tributary from the east, rising in the Huron Mountains, has its head waters within fifteen miles of Lake Superior, distant from Green Bay about two hundred miles, by the course of the two rivers. As was expected; there was a decidedly Lake Superior aspect in its flora. The soil is either sandy, forming pine plains covered with an almost exclusive growth of *Pinus resinosa*, the so-called "Norway Pine" of the lumbermen, or a light clay loam, devoted to the hard woods. Where the ground is less sandy, and richer, the White-pine occurs. Interspersed with these are swamps of Cedar, Tamarack and Birch. It is a rocky region, ledges frequently rising above the surrounding land, and being exposed in all the streams. These streams are full of rapids and waterfalls, owing to the frequent change of level, and many choice bits of scenery can be found hidden away in the woods.

Parallel with the Menominee Iron Range is a series of depressions occupied by small lakes, the most important of which in Michigan, commencing with the westernmost, near Iron Mountain, are lakes Antoine, Fumée and Hanbury. As the region is mainly given up to mining and lumbering, it is nearly in its primitive state, aside from the work of the ax and fire that have made sad havoc in some places. But little of the land is used for agriculture in the part visited, though some of it may, and doubtless soon will be, taken for that purpose. Prospectors for iron ore are the men busiest in turning up the soil, and the woods of the Iron Range are full of pits, sunk with the expectation of making a discovery of the useful metal and laying the foundation of a fortune. It is possible to go all day without meeting with a fence, save, perhaps, by the railroads, or near some village, as a protection against the village cows. It is such a state of things as would have delighted Rafinesque, who "liked the free range of the woods and glens," and hated the sight of fences like the Indians.[1] Out of the beaten track of the tourist, it is an inviting spot to one botanically or geologically inclined, for the writer ordinarily took wallet and hammer, as well as the customary tin box of the botanist, in nearly all trips, and often returned to his lodgings well loaded with rock specimens, since some great upheaving force had wrought with tremendous power on the rocks, setting some of the strata nearly on end, and the

[1] New Flora of North America, Part First, p. 14.

rock studies and geological problems were many and deeply interesting.

To one tired of work in the school-room and city, and wishing for mental rest and change, yet not freedom from all occupation, but employment in some new direction, often the best of recreation, such spots can be highly recommended. Physically, the work can be made as hard as is wanted for the strengthening of muscle and gaining a devouring appetite, by clambering over rocks and fallen timber, or making headway through cedar swamps and thickets, with only a path traced by deer and bear, an occasional sight of which may be gained. There being so much iron in the rocks and soil, the springs are chalybeate, and the thirsty explorer of the woods can drink in health from the running brooks.

To reach this region, a steamboat was taken at Chicago which, three days afterward, landed me at Escanaba, the principal shipping port for iron on Lake Michigan. It was long enough before sunset on a July day to get quarters in a hotel and take a stroll in the adjoining woods. The flora, as far as it went, was so much like that at the head of the lake, long a familiar working ground, that one blindfolded and carried to the midst of it would have been puzzled to tell the difference of location, when permitted to see it. There was less variety, something to be expected the farther north we go, especially in comparison with the sandy, pine barren section from Chicago eastward to Michigan City, remarkable for the variety and number of species. The main point of difference was the presence of *Pinus resinosa*, and *Potentilla tridentata*, and the profusion of *Cornus Canadensis* and *Linnæa borealis*, carpeting the ground in places. The last two are also found at the south end of the lake, in a few limited areas, and seem somewhat astray. It was the 9th of July, but in some places in the damp woods and cedar swamps, the Bunch-berry still whitened the ground and rotting logs with its large blossoms. And Linnæa was equally prolific with its modest flowers of pink; I gathered it in just the same state the present year (1884), on the 7th of June, at Pine Station, Ind. The length of the lake makes a difference of three or four weeks in the maturity of plants. I had not expected so much difference, and was surprised to see a bouquet of *Cypripedium spectabile* in the hand of a lady that came aboard the boat at Fayette, on the way to Escanaba. Near Chicago, its time of anthesis is ordinarily from the 5th to 25th of June. *Potentilla tridentata* was equally abundant where the soil was dry, spreading in the open woods

where *Pinus Banksiana* was thickly coming in, supplanting *P. resinosa*.

The evening stroll proved of sufficient interest to induce a stay for another day at Escanaba, and take in a wider circuit, south and west of the town. The land is quite level, and soon becomes swampy, with low sand ridges interspersed. Among the more interesting plants noticed, and not seen at the south end of the lake, may be mentioned *Carex trisperma*, Dew., *C. flava*, L. (in place of which we have the allied *C. Œderi*, Ehrh.), abundant in the wet meadows, *Eriophorum vaginatum*, L., the first I had seen of it, and regarded as rare, in similar places, *Rhynchospora fusca*, R. & S., also rare, and new to my herbarium (not mentioned in Wheeler & Smith's Catalogue of the Plants of Michigan). *Lonicera oblongifolia*, Muhl., was found in the wet woods. Occurring near Chicago, but not so abundantly, may be mentioned *Salix myrtilloides*, L., growing everywhere on the peat bogs, when not too wet. *Pyrola chlorantha*, Swartz, in the dry woods, and *Eriocaulon septangulare*, withering, in the shallow ponds. In the Tamarack Swamps *Potentilla palustris* often had a singular look, its stems and leaves becoming hoary with long white hairs, since it is commonly quite smooth, except the stipules and under side of the leaves. The genuine *Ranunculus Flammula*, L., not the variety *reptans* usually seen, was met with in the wet sands. The stems were ascending, or erect, with rather large flowers, looking so different in its habit from the form we generally find that at first it was hardly recognized as the same species. Some of the stems were seven inches high, with linear or lance-linear leaves, and the flowers nearly half an inch in diameter (7-16 inch by measurement). It is evidently var. *intermedia*, Gray, but with larger flowers than indicated in the description in the Manual. Some mosses were gathered, among which was *Mnium serratum*, Brid.

George Bentham.

The *Journal of Botany*, for December, gives a short account (with portrait) of this very distinguished botanist. It is prepared by Mr. B. D Jackson, Secretary of the Linnean Society, of which Mr. Bentham was President for 13 years (1861–1874). Mr. Bentham had one very great advantage in his life work, his means and family arrangements being such that he could devote his whole time systematically to the study of botany. The sali-

ent facts in the life of such a man should be known to botanists, and for this reason this *resume* has been prepared.

He was born at Stoke, a village near Portsmouth, on September 22d, 1800. He was the second son of Sir Samuel Bentham, and in his early years (1805–1807) he resided in St. Petersburg, to which capital his father had been sent by the English Government, and where he acquired a knowledge of the Russian and Scandinavian languages. In 1807 the family returned to England and resided at Hampstead until the peace which followed the banishment of Napoleon to Elba, when they removed to France, spending the most of their time in Southern France. The training of young Bentham was mainly committed to private tutors, he never having attended a school, which may have been to his advantage.

It was in Southern France that his attention was first turned to botany, a copy of DeCandolle's *Flore francaise* accidentally falling into his hands. His methodical mind was at once struck by the analytical tables, and testing them with the first plant he saw (*Salvia pratensis*), his success in naming it encouraged further study.

For a time he managed his father's estate near Montpellier, his studies being quite varied, not only plants, but insects and philosphy also occupying his attention, the last under the influance of John Stuart Mill, who was his father's guest for some months. To his credit it should be said that his agricultural operations were very successful, but he took time from them to botanize in the Pyrenees and the Cevennes.

In 1826 the family returned to England, and Bentham entered Lincoln's Inn and read for the bar, until 1832, when at the death of his uncle he found himself master of a house, and his father having died the year before, he entered into his independence. During these six years he worked incessantly. In 1826 he was elected Fellow of the Linnean Society. In 1827 he published his "Outlines of a New System of Logic," in which the doctrine of the quantification of the predicate is for the first time set forth. In 1829 he was appointed Secretary of the Royal Horticultural Society, which position he held until 1840. During this time he described most of the numerous species introduced by Hartweg, Douglas, and others, and raised from seeds. His first great botanical work was published in 1832–1836, being the *Labiatarum Genera et Species*. Before that time this great order was in utter confusion, and this classical work proved first the author's distinguished ability as a monographer.

In 1842 he left London for Herefordshire, working constantly on botany, and residing there until 1854, when he found that his increasing herbarium and library were growing beyond his means. His books and plants were therefore presented to the Royal Gardens, at Kew, and he himself returned to London, residing at 25 Wilton Place until his death.

For the last 30 years of his life he devoted his time to botany as constantly and systematically as a bank clerk, and one day was like every other, but the result was a marvellous amount of work. Even this daily routine is interesting. At a few minutes after nine he left home, drove to Vauxhall, thence by rail to Kew, where he worked from ten to nearly four. Returning home, an hour or two was spent in writing out the notes of the day's work, and then dinner was eaten, being the second and last meal for the day. Two months' holiday was taken in autumn, and each Thursday was devoted to the Linnean Society, while he was its President.

A bibliography of Bentham's writings is an extensive affair, but an elaborate one has been prepared by Dr. Kanitz, and published in *Magyar Novenytani Lapok*, for September and October. Among the great works undertaken after Mr. Bentham's establishment, at Kew, may be mentioned the series of Colonial Floras. Then came the great work on the wonderful Australian flora, in which Baron Ferd. Von Müller rendered great assistance. But the last, and crowning work of his life, was undertaken at 60 years of age, in conjunction with Sir Joseph Hooker. It was no less than a complete revision of the genera of phanerogams based on a careful study of the enormous mass of material collected at Kew. The first part was published in 1862, and when, in 1883, the last part appeared, and the *Genera Plantarum* was complete, it was felt that the venerable author had earned his rest. From this time his health declined, and on September 20th, 1884, he died at his house in Wilton Place.

No systematic botanist has done more faithful and lasting work than Mr. Bentham, or was more fortunate in finishing what he undertook, and his very long life resulted in great things for the science he loved.

It is said that personally he was very reserved, as is natural to a modest man and one saving of his time, but to those who were fortunate enough to know him, he revealed a kind and generous nature.

GENERAL NOTES.

A Rose astray.—On a common climbing double red rose in my yard there is a sprout, on which, at about the middle, grows a whorl of four bracts, subtending a cluster of ordinary petals, giving the appearance of a stem growing through the center of a rose. The bracts are oblanceolate and toothed.—E. B. HARGER, *Oxford, Conn.*

Geographical Distribution of Plants.—In *Harper's Magazine*, November, 1871, is an account of a curious character known as Johnny Appleseed, who devoted his life, commencing before 1801, to planting apple seeds in favorable locations in advance of settlement, and thus securing a wide distribution of apple trees for the coming settler. In this article is mention of the distribution by the same party of seeds of dog-fennel or May-weed, under a belief in its antimalarial virtues. This circumstance is illustration how the acts of a single "crank" can serve as a factor in the geographical distribution of plants.

The ox-eye daisy, now so fashionable a flower, is said to be springing up on the lines of our Western railroads, the flowers carried by the ladies from the East until wilted, and then thrown from the car window, furnishing the seed supply for the distribution.

In Northern Maine this same ox-eye daisy has secured strong foothold, introduced through the former purchase of bale hay from other localities, for the feeding of logging teams in the woods in winter, at times when the local crop was short.—E. LEWIS STURTEVANT, *Geneva, N.Y.*

Dionæa muscipula.—I am much puzzled by a plant which I have been carefully nursing for some months past, and appeal to the BOTANICAL GAZETTE for light on the subject. Last April a friend brought to me, from the vicinity of Wilmington, N. C., a *Dionæa muscipula*, the first and only one I have ever seen, consisting of a small bunch of rounded leaves, and a number of winged, foliaceous petioles, bearing the peculiar trap appendages at the summit. I had the plant set out in a damp, shady nook of the garden, and have carefully tended and watched it with interest ever since. At first it seemed to thrive; several new traps gradually developed, the mature ones remained green and healthy-looking, one of which entrapped an insect, and after a fortnight or so, two flower stalks, as I supposed, shot up from the center of the plant, and I had strong hopes of seeing my cherished Dionæa in bloom. But they soon withered away, and one by one the traps died also, leaving no trace save in the cluster of cordate, dentate leaves, which flourished vigorously, and have continued to increase, sending out runners, which have taken root all round the parent plant, until now the group of independent bunches (except for the creeping, recumbent stem, which seems to link them all together) numbers about twenty-five.

The only description (technical) of *Dionæa muscipula* which I have seen is by Darby (from Ellis), which begins: "Without stem. Leaves spreading. Petioles winged, foliaceous," etc., etc. Whereas my plant has creeping stems in abundance, bearing, at intervals of two to three inches, a pair of opposite leaves, from which invariably descend rootlets, while the axils are nuclei of

new plants, and leaves having petioles of two inches in length when fully grown. I have come to the conclusion that I have been hoodwinked, and that very unusual prey has this time been a victim of Venus's Fly-trap! Is it not possible that the Dionæa grew in close and intimate connection with the roots and stems of some companion, and that it is the foster plant which flourishes, while the Fly-trap perished?—ELIZABETH L. H. WILLIS, *Charleston, S. C.*

EDITORIAL NOTES.

DR. J. G. BAKER has described, in the *Journal of Botany*, six new species of ferns from Costa Rica, collected by Mr. P. G. Harrison. They are equally divided among *Asplenium*, *Nephrodium*, and *Polypodium*.

CHINA seems to be yielding much new material to the authorities at Kew. It is somewhat of a pity that the native plants of China have felt for so long a time the pressure of man's presence before they could be studied. It will be hard to eliminate the human factor and get a true view of the indigenous flora, although Chinese customs would prevent much inroad of foreign plants. In the December *Journal of Botany* Dr. Hance describes two new epiphytic orchids, and four *Cæsalpiniew*. Among the latter a new *Gymnocladus* is especially notable. A few years ago our North American *G. Canadensis*, L., was the only representative of the genus; then *G. Chinensis*, Baill., a Chinese species, was discovered; and now a second Chinese species, *G. Williamsi*, Hance, is described, and curiously enough it is much more nearly related to the American form than to *G. Chinensis*. A new *Gleditschia* is also one of the four.

REV. B. SCORTECHINI has described a new genus of Rubiaceous trees from the Malayan Peninsula. It is called *Creaghia*, and belongs to the tribe *Cinchonew*. This type species is about 40 feet high, and bears the name of *C. fagraeopsis*.

IN THE DECEMBER number of the *American Monthly Microscpical Journal* the editor makes a complaint that Mr. J. Kruttschnitt's work on fertilization of the ovule has not attracted the attention it deserves. It is rather sweeping, to say the least, to observe that botanists have ignored it without giving it the slightest attention, as though they had some small spite against Mr. Kruttschnitt. Valuable work is appreciated by every botanist, and none are more eager to hail any discovery that will break up some encrusted theory. In fact, we rather incline to startling deductions too eagerly. But when a man undertakes to prove that the descent of the pollen tube to the ovule is a myth he contradicts, not our text-books, for in modern botany these are not depended on, but the every day experience of our laboratories. The demonstration of pollen tubes in the ovary cavity, and in the micropyle itself, is so comparatively easy that no class has advanced very far into laboratory work without successfully accomplishing it. It is almost like a man denying that hydrogen and oxygen do not exist in water. What chemist would stop to notice a theory based upon that supposition? What botanist has time to devote to one who stands upon such a plane that no starting point can be found short of the elements of botany?

The inference is fairly ridiculous that in these days of keen investigation botanists would accept upon faith one of the most fundamental statements of their science, and that too, when vastly improved instruments and methods have rendered its testing a matter of comparative ease. The fact that it is not such a very recondite thing is shown by the statement already made that its demonstration is a very ordinary operation of the botanical laboratories of to-day, and the path broken by Amici in the early part of this century has often been traveled since. We do not pretend to say that everything has been discovered with reference to this process of fertilization. Very far from it, for many things yet remain to be told. But when a worker begins by saying that pollen-tubes are not found even in the cavity of the ovary, much less connected with the ovules, we must shake our heads, for too many of us have seen them in both places. And then what will botanists think of the statement that "comparatively few of the botanists ever use a compound microscope, and of those who do not many are aware of the amount of labor involved in a thorough microscopical investigation by means of thin sections!" Now, we do not wonder at the rest of the editorial, for such lack of information concerning the botanical laboratories and methods of to-day could only mean unqualified ignorance of their results. It is freely granted that the old methods are still extensively used, but far from enough to justify any such statement as quoted above, and not at all by the recognized leaders in botany. The closing statement we heartily accept, and see no good reason why we should not, for it says, "It is well known that competent observers claim to have traced the pollen-tubes through the styles of certain plants. This, however, does not prove that this process of fertilization is universal." We should say not.

Let some microscopist, laying aside all but the simplest parts of his paraphernalia, take the flowers of any common small plant, as *Capsella* for instance, and clearing with potash examine a section of the ovary, and it will be a strange chance if any number of the pollen-tubes are not found in the cavity of the ovary and some even sticking to micropyles. In conclusion it should be said that the writer has examined a full series of Mr. Kruttschnitt's slides.

In the last (January) *American Naturalist* Prof. Bessey refers to a difference of opinion, rather warmly expressed in *Nature*, between Rev. George Henslow and W. T. Thistleton Dyer. These distinguished botanists somewhat represent the old and new methods of teaching botany. As in every reform the first tendency is to swing to the opposite extreme, so the new botany begins by scouting the old and fairly abhorring classification. It is the case of a superstructure despising the foundation upon which it rests, for systematic botany necessarily came first, and if it does not contain all the botanical problems, or even the most important ones, it certainly presents some that are extremely important and worthy any student's consideration. That systematic botany is a dried pod, out of which all the seeds have rattled, is a grand mistake, for our material is now but fairly brought together for the work of the monographer to begin. This is no plea for the study of systematic botany as opposed to the structural and physiological, as the writer's own laboratory will abundantly

testify. But it is meant to call attention to the fact that the pendulum has swung farther away from the old side than it can stay, and that a study of botany must include the systematic phase. Whether a class should begin with Gray's text-books and Manual, and then follow Bessey, or begin with protoplasm and run the whole gamut of tissues and tissue systems, and then study classification, is for the individual teacher to decide, and is as often a question of convenience as anything else. The point is that both kinds of work should be done. If the time allotted to such work is comparatively short, the very best method is to combine the two, and beginning with Protococcus, let types of classification and of structure advance with equal step. The writer is not sure but that this is the best way to begin the study of botany at any rate, as it surely results in a broader, more comprehensive view of plants than either of the other methods alone. But for convenience of application, as well as a means of awakening general interest in plants, systematic botany holds, and always will hold, a very important place. Of course it becomes disastrous when the impression is left that all of a plant is its name, just as it would be if the examination of some dozen types should lead to the conclusion that all plant structures had been studied.

C. R. ORCUTT has begun the publication of a scientific paper at San Diego, California, entitled *The West-American Scientist*, and is meant to be "a popular review and record for the Pacific coast." It is a four-page octavo, issued monthly, and costs fifty cents a year.

IT IS REMARKABLE what an amount of material can be collected with reference to a single plant. The last number (No. 4) of the quarterly *Drugs and Medicines of North America* continues the subject of *Hydrastis Canadensis*, and the next number will pursue it still farther.

THE DOUBT THROWN upon Koch's cholera bacillus by the work of Finkler and Pryor has been completely dispelled by Koch himself, who not only convicts his critics of cultures that are not pure, but also has readily produced cholera by the inoculation of a solution of a pure culture, even in so small an amount as .01 of a drop. Koch's results have been amply confirmed also by E. von Ermengen, and the so-called cholera bacillus and cholera seem bound together by ties that can not be broken.

IT HAS GENERALLY been supposed by biologists that a distinct department of "microscopy" had about as good a right to exist as a department of razors or sewing-machines. And this is true when taken as such a department is sometimes conducted; but any biologist reading Dr. Whitman's note in the January *American Naturalist* will discover that he wants to keep his eye on that department as Dr. Whitman proposes to conduct it or he will miss something he ought to know. When "microscopy" becomes less subjective and more objective, biologists had better prick up their ears.

CURRENT LITERATURE.

Select Extra-tropical Plants readily eligible for industrial culture or naturalization. By Baron Ferd. von Mueller. 8vo. 450 pp. Geo. S. Davis, Detroit, Mich., 1884.

This is a book of great value to all engaged in cultivating plants, and of great interest to every botanist. Its author has long been recognized as a leader in this sort of work, and his success at the Melbourne Botanic Garden is well known. This book is no new thought, but rather an enlargement and adaptation for North America of what has already been done by the same author for less extensive regions. Published by an enterprising American publisher, it is to be hoped his risk will be justified by the generous response of all interested in the subject. Species are arranged in alphabetical order, regardless of family relations, but the relative importance of families for industrial culture is pointed out in a special table at the end of the book. The notes under each species are very concise and well selected, in view of the fact that they could have been almost indefinitely extended. Range, use and treatment are the subjects considered, and not scientific characters. It is to be hoped that this book will greatly stimulate the desire for cultivating a much greater variety of plants, for it surely furnishes every convenience for their judicious selection. A geographic index is quite a feature, by means of which plants from any geographical division can be readily selected. A grouping of genera under their uses is also very instructive; such groupings as "Alimentary Plants" (subdivided according to the part used, such as herbage, root, esculent fruits, etc.), "Condiment Plants," "Fodder-Plants," "Honey-Plants," "Medicinal Plants," "Scenic Plants," etc., being used. In the systematic index of genera it is interesting to note the relative importance of families in this respect. *Gramineæ* heads the list with 77 genera; then *Leguminosæ* with 73; *Compositæ* 37; *Palmaceæ* 34; *Umbelliferæ* 32; *Liliaceæ* 20; *Labiatæ* 20, and so on, Dicotyledons and Monocotyledons successively vieing with each other in the display of useful genera. Owing to the much greater number of families, of course Dicotyledons eventually outnumber Monocotyledons; but the two great families, *Gramineæ* and *Leguminosæ* stand preeminently above all others in their relation to man's needs.

Preliminary List of the Parasitic Fungi of Wisconsin. By William Trelease. From Trans. Wisconsin Acad. Sci., vol. vi. 40 pp.

The author modestly calls this a provisional list and as such he intends to make it. It contains about 270 species, several of which are new, on about the same number of host-plants, mostly phænogams. Most of the species have been collected about Madison by the author, assisted by Mr. L. H. Pammel, a special laboratory student. This list will be very rapidly increased by a few seasons' collecting, and it is a move in exactly the right direction. As our state lists of the more prominent plants have been for the most part completed, what is more interesting or important than a catalogue of the parasitic fungi? Such lists can be valuable or worthless, and as competent cryptogamic botanists are as yet comparatively few in number, it is doubtful whether many states should attempt such a catalogue. But when a man of Prof. Trelease's experience and connections comes into an unexplored state it would be a shame if such work was not done. An index of host-plants is given and is so invaluable in such a catalogue that there should never be even a thought of omitting it. The botanists of Wisconsin should send Prof. Trelease specimens from all parts of the state, that the list may be made as quickly and as complete as possible.